APPENDIX A

CURRENT CLAIMS

1. For use in an oscillator, a two port SAW resonator circuit for providing a tunable low phase noise oscillator signal comprising:

a two port SAW resonator;

at least one inductance coupled to a port of the SAW resonator, wherein the at least one inductance is connected and sized to approximately tune out a stray capacitance seen at the port within an equivalent circuit for the SAW resonator at a selected frequency; and

at least one variable tuning capacitance coupled between the port of the SAW resonator and an input or output port for the SAW resonator circuit, wherein the at least one tuning capacitance forms a series resonance circuit with the SAW resonator and may be selectively employed to alter a resonant frequency of the SAW resonator circuit.

2. The SAW resonator circuit as set forth in Claim 1 wherein the stray capacitance is connected within the equivalent circuit between the port and a ground voltage level and wherein the at least one inductance is connected in parallel with the stray capacitance between the port and the ground voltage level.

3. The SAW resonator circuit as set forth in Claim 1 wherein the at least one inductance coupled to a port of the SAW resonator further comprises:

a first inductance coupled to a first port of the SAW resonator, the first inductance connected in parallel with a first stray capacitance seen at the first port within the equivalent circuit for the SAW resonator and sized to approximately tune out the first stray capacitance at the selected frequency; and

a second inductance coupled to a second port of the SAW resonator, the second inductance connected in parallel with a second stray capacitance seen at the second port within the equivalent circuit for the SAW resonator and sized to approximately tune out the second stray capacitance at the selected frequency.

4. The SAW resonator circuit as set forth in Claim 3 wherein the at least one variable tuning capacitance coupled between the port of the SAW resonator and an input or output port for the SAW resonator circuit further comprises:

a first varactor diode connected in series between the first port of the SAW resonator and an input port for the SAW resonator circuit; and

a second varactor diode connected in series between the second port of the SAW resonator and an output port for the SAW resonator circuit.

5. The SAW resonator circuit as set forth in Claim 1 wherein adjusting a capacitance of the at least one variable tuning capacitance alters the resonant frequency for the SAW resonator circuit by altering a total capacitance for the series resonator circuit formed by a series resonator within the equivalent circuit for the SAW resonator and the at least one tuning capacitance.

6. The SAW resonator circuit as set forth in Claim 1 further comprising:

a load connected to an output port for the SAW resonator circuit, the load providing an impedance lower than an impedance of the stray capacitance seen at the output port within the equivalent circuit for the SAW resonator.

7. The SAW resonator circuit as set forth in Claim 6 wherein the at least one inductance coupled to a port of the SAW resonator further comprises:

a single inductance connected in parallel with the stray capacitance at the port of the SAW resonator, wherein no inductance is coupled to another port of the SAW resonator.

8. An oscillator comprising:

an amplifier; and

a two port SAW resonator circuit connected in a series loop with the amplifier for providing a tunable low phase noise oscillating signal comprising:

a two port SAW resonator;

at least one inductance coupled to a port of the SAW resonator, wherein the at least one inductance is connected and sized to approximately tune out a stray capacitance seen at the port within an equivalent circuit for the SAW resonator at a selected frequency; and

at least one variable tuning capacitance coupled between the port of the SAW resonator and an input or output port for the SAW resonator circuit, wherein the at least one tuning capacitance forms a series resonance circuit with the SAW resonator and may be selectively employed to alter a resonant frequency of the SAW resonator circuit.

9. The oscillator as set forth in Claim 8 wherein the stray capacitance is connected within the equivalent circuit between the port and a ground voltage level and wherein the at least one inductance is connected in parallel with the stray capacitance between the port and the ground voltage level.

10. The oscillator as set forth in Claim 8 wherein the at least one inductance coupled to a port of the SAW resonator further comprises:

a first inductance coupled to a first port of the SAW resonator, the first inductance connected in parallel with a first stray capacitance seen at the first port within the equivalent circuit

for the SAW resonator and sized to approximately tune out the first stray capacitance at the selected frequency; and

a second inductance coupled to a second port of the SAW resonator, the second inductance connected in parallel with a second stray capacitance seen at the second port within the equivalent circuit for the SAW resonator and sized to approximately tune out the second stray capacitance at the selected frequency.

11. The oscillator as set forth in Claim 10 wherein the at least one variable tuning capacitance coupled between the port of the SAW resonator and an input or output port for the SAW resonator circuit further comprises:

a first varactor diode connected in series between the first port of the SAW resonator and an input port for the SAW resonator circuit; and

a second varactor diode connected in series between the second port of the SAW resonator and an output port for the SAW resonator circuit.

12. The oscillator as set forth in Claim 8 wherein adjusting a capacitance of the at least one variable tuning capacitance alters the resonant frequency for the SAW resonator circuit by altering a total capacitance for the series resonator circuit formed by a series resonator within the equivalent circuit for the SAW resonator and the at least one tuning capacitance.

13. The oscillator as set forth in Claim 8 further comprising:

a load connected to an output port for the SAW resonator circuit, the load providing an impedance lower than an impedance of the stray capacitance seen at the output port within the equivalent circuit for the SAW resonator.

14. The oscillator as set forth in Claim 13 wherein the at least one inductance coupled to a port of the SAW resonator further comprises:

a single inductance connected in parallel with the stray capacitance at the port of the SAW resonator, wherein no inductance is coupled to another port of the SAW resonator.

15. For use in an oscillator, a method of tuning a SAW resonator circuit while maintaining low phase noise comprising the steps of:

applying an input signal to a port for a two port SAW resonator, wherein a stray capacitance seen within an equivalent circuit for the SAW resonator at the port is approximately tuned out at a selected frequency; and

adjusting a total capacitance for a series resonator circuit formed by a series resonator within the equivalent circuit for the SAW resonator and at least one variable tuning capacitance connected between the port and an input or output port for the SAW resonator circuit.

16. The method of claim 15 further comprising:

exciting at least one inductance coupled to the port of the SAW resonator, wherein the at least one inductance is connected and sized to approximately tune out the stray capacitance at the selected frequency.

17. The method of claim 16, wherein the step of exciting at least one inductance coupled to the port of the SAW resonator further comprises:

exciting a first inductance connected at a first port for the SAW resonator in parallel with a first stray capacitance seen within the equivalent circuit for the SAW resonator at the first port and sized to approximately tune out the first stray capacitance at the selected frequency; and

exciting a second inductance connected at a second port for the SAW resonator in parallel with a second stray capacitance seen within the equivalent circuit for the SAW resonator at the second port and sized to approximately tune out the second stray capacitance at the selected frequency.

18. The method of claim 15 wherein the step of adjusting a total capacitance for a series resonator circuit formed by a series resonator within the equivalent circuit for the SAW resonator and at least one variable tuning capacitance connected between the port and an input or output port for the SAW resonator circuit further comprises:

altering a voltage applied to a varactor diode forming the at least one tuning capacitance.

19. The method of claim 15 further comprising:

employing an oscillator including the SAW resonator circuit.

20. The method of claim 19 further comprising:

altering a frequency at which the oscillator oscillates by adjusting the total capacitance for the series resonator circuit.